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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
DICKEY, THOMAS L	
ART UNIT	PAPER NUMBER
2826	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/822,148	YANG ET AL.	
	Examiner	Art Unit	
	Thomas L. Dickey	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-15,57-60,69-79,100-114 and 116-129* is/are pending in the application.

4a) Of the above claim(s) *15,57-60,69-79,100-109 and 118-129* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-14 and 110-117* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This rejection is non-final. Applicant correctly points out that HOFFMAN ET AL. 6,113,722 does not explicitly or inherently disclose a single crystal nanotube, as claimed in dependent claims 10 and 110. Additional art must therefor be cited to cover these dependent claims.

2. The amendment filed on 1/24/07 has been entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 12 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a tubular member comprising silica, does not reasonably provide enablement for a tubular member comprising polyimide (one of the polymers contained in the Markush Group of claim 12). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to either make or use the invention commensurate in scope with these claims, because applicants do not teach, nor would one of ordinary skill in the art be able to determine without undue experimentation, how to make a hydrophilic nanotube out of polyimide.

Applicants point out at paragraph 204 of the instant application that:

> The forces that control intermolecular interactions between a hydrophilic surface and water are hydration, electrostatic, and Van Der Waals forces. Hydration forces, which originate from steric interactions resulting from hydrogen bonding of water to a polar surface, generally occur between 1-2 nm. Electrostatic forces resulting from osmotic pressure of counterions near a charged surface typically range from 1-50 nm (Debye length), depending on the bulk ion concentration. Finally, Van Der Waals forces range between 1-50 nm as well. Therefore, it is clear that nanocapillaries, with diameters in the 5-20 nm, fall within the range of these surface and intermolecular forces. Therefore, continuum theories of fluid transport are invalid for these length scales.

This statement, in the Examiner's opinion, provides evidence that the specification is non-enabling for an assortment of polymers. For example polyethylene terephthalate is well known to be hydrophilic in bulk, or in a broad, thin sheet. But, as Applicants have explained, this knowledge offers no guidance to one of skill in the art that when confined to a nanoscale tube, polyethylene terephthalate remains hydrophilic. Further, based on Applicants' explanation of the various conflicting forces that make a surface either hydrophobic or hydrophilic it is clear that Applicants do not teach, nor would one of ordinary skill in the art be able to determine without undue experimentation, how to make a nanotube with hydrophilic inner walls from InGaAsN, InSb, AlAsP, $HoMnO_3$, HoO_3Ti, HoO_3V, LiI, MnO, or Mg_2Sn (to name a few II-VI and III-V compounds).

Claims 5-11, 13, and 110-117, which depend from claim 1, must necessarily share the defect as claim 1, and are therefore rejected under 35 U.S.C. 112, first paragraph.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

A. Claims 1, 5-9,11-14, and 111-117 are rejected under 35 U.S.C. 102(b) as being anticipated by HOFFMAN ET AL. (6,113,722).

Hoffman et al. discloses a nanotube comprising a tubular member having first and second ends, and an inner bore, said tubular member having two ends, between said first and second ends; said tubular member having a non-porous inner wall; formed by a process comprising steps of forming a single-crystalline core material (Hoffman et al. simply and straightforwardly refer to Applicants' long, thin "core material" as a "fiber") comprising a material (carbon, graphite, polymer, metal, glass, ceramic, or other tube forming fibers," note column 2 lines 60-67) selected from the group of materials consisting essentially of zinc oxide (ZnO), silicon (Si), gallium nitride (GaN), germanium (Ge), silver (Ag), gold (Au), group II-VI materials, group III-V materials, elemental group IV materials, and metals, and comprising a sacrificial template for said nanotube; depositing a single-crystalline nanotube material (Hoffman et al. simply and straightforwardly refer to Applicants' "nanotube material" as a "surface coating," because it coats the fiber (pardon me, "core material")) comprising a material, for example, silica, sapphire, various metals, etc. (note column 3 lines 1-10) selected from the group of materials consisting essentially of GaN, Si, GaAs, CdSe, GaP, InP, Ge, InAs, Group II, III, IV, V, and VI materials including quaternaries and tertiaries, as well

as oxides, SiO, GaO, InO and other insulating materials, elemental metals, and polymers over said core material ("fiber"), wherein said core material ("fiber") has ends and a side surface; and wherein said nanotube material ("surface coating") is deposited on said side surface to form a cylindrical sheath through which said core material ("fiber") extends, and wherein the material selected for said nanotube material ("surface coating") has a sufficiently similar crystalline structure and lattice constant as the material selected for said core material ("fiber") to allow epitaxial ("epitaxial" means growth of said nanotube material ("surface coating") on said core material ("fiber"); and removing said core material ("fiber") while said core material ("fiber") is sacrificed; said tubular member comprising silica (note column 2 line 26), which is a non-carbon, hydrophilic material. Note figures 5,6, column 2 lines 60-67, column 3 lines 10-60, column 4 lines 1-40, column 7 lines 25-42, and column 8 lines 7-40 of Hoffman et al. Note that applicants admit that silica is inherently hydrophilic at page 3 paragraph 0013 of their application.

B. Claims 1, 5-14, and 110-117 are rejected under 35 U.S.C. 102(e) as being anticipated by GHADIRI (6,613,875).

Ghadiri discloses a substantially (i.e. approximately) isotropic fluidic nanotube comprising a tubular member (see figure 1) having first and second ends, and an inner bore, said tubular member having an inner bore between said first and second ends; said tubular member having a non-porous inner wall; said tubular member comprising single crystal (note figure 18E and column 5 lines 1-5) peptide (a polymer), which is a non-carbon, hydrophilic (as measured. Note column 18 lines 64-67) material; said inner wall being substantially (i.e. approximately) continuous, seamless and of uniform

diameter; said nanotube being the functional component of a nanodevice. Note figures 1, 16A, 18E, column 5 lines 1-5, column 7 lines 1-34, column 16 lines 65-67, and column 18 lines 23-67 of Ghadiri.

With specific regard to claim 12, it is noted that peptide (a polymer) is a member of the group of materials consisting of GaN, Si, GaAs, CdSe, GaP, InP, Ge, InAs, Group II, III, IV, V, and VI materials including quaternaries and tertiaries, as well as oxides, SiO, GaO, InO and other insulating materials, elemental metals, and polymers.

The applicant's claims 5-9, 11, and 13 do not distinguish over either claim 1 or the Ghadiri reference regardless of the process used to form said nanotube, because only the final product is relevant, not the recited process of forming said nanotube by steps comprising 1) forming a single-crystalline core material comprising a material selected from the group of materials consisting essentially of zinc oxide (ZnO), silicon (Si), gallium nitride (GaN), germanium (Ge), silver (Ag), gold (Au), group II-VI materials, group III-V materials, elemental group IV materials, and metals, and comprising a sacrificial template for said nanotube; 2) depositing a nanotube material over said core material, wherein said core material has ends and a side surface; and wherein said nanotube material is deposited on said side surface to form a cylindrical sheath through which said core material extends, 3) selecting the material for said (sacrificed) core material to have a sufficiently similar crystalline structure and lattice constant as the material selected for said nanotube material to allow epitaxial growth of said nanotube material on said core material; and 4) removing said core material while said core material is sacrificed.

In like vein the applicant's claims 10 and 115-117 do not distinguish over either claims 110, 112-114, or the Ghadiri reference regardless of the process used to form said nanotube, because only the final product is relevant, not the recited process of forming said nanotube by steps comprising 1) forming a core material; 2) depositing a nanotube material over said core material, and 3) removing said core material. Nor does (since Ghadiri discloses peptide (a polymer)) the applicant's claim 12 distinguish over the Ghadiri reference regardless of the process used to form said nanotube, because only the final product is relevant, not the recited process of forming said nanotube by steps comprising 1) forming a core material; 2) depositing a nanotube material over said core material, and 3) removing said core material.

Note that a "product by process" claim is directed to the product per se, no matter how actually made. In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and In re Marosi et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw makes clear. See also MPEP 706.03(e).

C. Claims 1, 5-14, and 110-117 are rejected under 35 U.S.C. 102(a) as being anticipated by WU ET AL. ("Heterostructures of ZnO–Zn coaxial nanocables and ZnO nanotubes," Appl. Phys. Lett., Vol. 81 No. 7 (12 AUGUST 2002), pp. 1312-1314).

Wu et al. discloses a substantially (i.e. approximately) isotropic fluidic nanotube comprising a tubular member (note Figure 1, which is a photograph of such a tubular member) having first and second ends, said tubular member having an inner bore between said first and second ends; said tubular member having a non-porous inner wall; said tubular member comprising single crystal ZnO (an oxide), which is a non-carbon, hydrophilic material; said inner wall being substantially (i.e. approximately) continuous, seamless and of uniform diameter; said nanotube being the functional component of a nanodevice. Note that ZnO (an oxide) is inherently hydrophilic, according to the first paragraph of Mensah et al. ("Formation of single crystalline ZnO nanotubes without catalysts and templates," Appl. Phys. Lett., Vol. 90 (12 March 2007), p. 113108).

With specific regard to claim 12, it is noted that ZnO (an oxide) is a member of the group of materials consisting of GaN, Si, GaAs, CdSe, GaP, InP, Ge, InAs, Group II, III, IV, V, and VI materials including quaternaries and tertiaries, as well as oxides, SiO, GaO, InO and other insulating materials, elemental metals, and polymers.

Wu et al. disclose that their ZnO nanotubes are formed by partial evaporation of a core material of ZnO. Wu et al. thus arguably disclose the method of forming a nanotube that Applicants disclose, without claiming as such, in claims 5-14. Regardless, the applicant's claims 5-9, 11, 13, and 14 do not distinguish over either claim 1 or the Wu et al. reference regardless of the process used to form said nanotube, because only the final product is relevant, not the recited process of forming said nanotube by steps comprising 1) forming a single-crystalline core material comprising a material selected from the group of materials consisting essentially of zinc oxide (ZnO), silicon (Si),

gallium nitride (GaN), germanium (Ge), silver (Ag), gold (Au), group II-VI materials, group III-V materials, elemental group IV materials, and metals, and comprising a sacrificial template for said nanotube; 2) depositing a nanotube material over said core material, wherein said core material has ends and a side surface; and wherein said nanotube material is deposited on said side surface to form a cylindrical sheath through which said core material extends, 3) selecting the material for said (sacrificed) core material to have a sufficiently similar crystalline structure and lattice constant as the material selected for said nanotube material to allow epitaxial growth of said nanotube material on said core material; and 4) removing said core material while said core material is sacrificed.

In like vein the applicant's claims 10 and 115-117 do not distinguish over either claims 110, 112-114, or the Wu et al. reference regardless of the process used to form said nanotube, because only the final product is relevant, not the recited process of forming said nanotube by steps comprising 1) forming a core material; 2) depositing a nanotube material over said core material, and 3) removing said core material.

Nor does (since Wu et al. discloses ZnO (an oxide)) the applicant's claim 12 distinguish over the Wu et al. reference regardless of the process used to form said nanotube, because only the final product is relevant, not the recited process of forming said nanotube by steps comprising 1) forming a core material; 2) depositing a nanotube material over said core material, and 3) removing said core material.

Note that a "product by process" claim is directed to the product per se, no matter how actually made. In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re

Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and In re Marosi et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw makes clear. See also MPEP 706.03(e).

D. Claims 1, 5-9,11-14, and 111-117 are rejected under 35 U.S.C. 102(e) as being anticipated by MAJUMDAR ET AL. (2002/0175408).

Paragraphs 113-114 of Majumdar et al. recite:

> It is also possible to synthesize co-axial nanostructures such as shown in FIG. 2 using the as-made nanowires as physical templates. For example, conformal and uniform carbon coating on Ge nanowires can be obtained by decomposing organic molecules on the wire surface. This approach can be readily extended to create COHNs with strong electron confinement effect. For example, GaAs nanowires fabricated using VLS could be subsequently coated with a thin layer of $Al_{1-x}Ga_xAs$ by using low temperature chemical vapor deposition process that effectively avoids crystal growth along the wire axis and promotes surface overgrowth of $Al_{1-x}Ga_xAs$. Note, however, that the sheath can be crystalline or amorphous, and can include materials such as polymers, semiconductors, oxides, and the like. To form a COHN, a single-segment nanowire or a LOHN would first be formed according to any of the methods described herein. The single-segment nanowire or the LOHN, which will become the core of the COHN is then used as a template for forming the sheath. For example, the sheath can be formed by polymerization of monomers on the surface of the single-segment nanowire or the COHN. Alternatively, any physical vapor deposition (PVD) or chemical vapor deposition (CVD) process can be used to coat the single-segment nanowire or the LOHN. Examples of core/sheath materials, respectively, include, but are not limited to, Si and ZnO, Ge and C, Si and SiO_2, SnO_2 and TiO_2, GaN and ZnO, GaAlN and GaN. Note that there is essentially an unlimited number of core/sheath material configurations. Even oxides, such as ZnO, can be used for the core material. The following is a list of core/sheath configurations where, for example, both the core and the sheath are monocrystalline: TiO_2/SnO_2; M:TiO_2/SnO_2 (M=Mn, Fe, Co, Cr, etc.); $PbTiO_2/SnO_2$; $BaTiO_2/SnO_2$; $LaMnO_2/SnO_2$; and HTSC/SnO_2 (high temperature semiconductor--HTSC); GaAs/GaAlAs.
>
> Note also that this approach can be used to synthesize a nanotube. For example, a Ge nanowire core could be coated with an organic molecular material. The surface of the organic material would then be carbonized by pyrolysis in a vacuum. The Ge nanowire core would then be melted or evaporated at a temperature ranging from approximately 800.degree. C. to approximately 1000.degree. C., thereby forming a carbon nanotube. In addition, the same process may be utilized to form a "nanocylinder", in which a COHN structure is formed and the core is then differentially etched away, leaving only the outer sheath (or cylinder). This cylinder may be made from any of the materials from which a sheath may be made, including but not limited to C, Si and SiO_2, SnO_2 and TiO_2, GaN and ZnO, GaAlN and GaN. It will be appreciated that structural characterization of these nanowires will rely heavily on transmission electron microscopy (TEM) and X-ray diffraction (XRD). Both XRD and TEM will allow for

> determining the structure/phase of the nanowires. In addition, TEM will provide further information on the defect structures within individual wires, the local microstructure at the interface, growth direction, and overall crystallinity.

Figure 2 of Majumdar et al. actually shows nanotube 16 (albeit prior to the step of melting or evaporating away" core 14). Majumdar et al. thus discloses a substantially (i.e. approximately) isotropic fluidic nanotube comprising a tubular member having first and second ends, and an inner bore, said tubular member having an inner bore between said first and second ends; said tubular member having a non-porous inner wall; said tubular member comprising single crystal GaN, which is a non-carbon, hydrophilic material; said inner wall being substantially (i.e. approximately) continuous, seamless and of uniform diameter; said nanotube being the functional component of a nanodevice.

With specific regard to claim 12, it is noted that GaN is a member of the group of materials consisting of GaN, Si, GaAs, CdSe, GaP, InP, Ge, InAs, Group II, III, IV, V, and VI materials including quaternaries and tertiaries, as well as oxides, SiO, GaO, InO and other insulating materials, elemental metals, and polymers.

With specific regard to claims 5-9, 11, and 13 the Majumdar et al. reference specifically discloses the recited process of forming said nanotube by steps comprising 1) forming a single-crystalline ZnO core material; 2) depositing a nanotube material over said core material, wherein said core material has ends and a side surface; and wherein said nanotube material is deposited on said side surface to form a cylindrical sheath through which said core material extends, 3) selecting the material for said (sacrificed) core material to have a sufficiently similar crystalline structure and lattice constant as the material selected for said nanotube material to allow epitaxial growth of said

nanotube material on said core material; and 4) removing said core material while said core material is sacrificed.

Response to Arguments

5. Applicant's arguments with respect to claims 10 and 110 have been considered but are moot in view of the new ground(s) of rejection.

6. With regard to claims 1,5-9, 11-14, and 111-117 (115-117 as amended) Applicant's arguments filed 1/24/07 have been fully considered but they are not persuasive.

It is argued, at page 13 of the remarks, that "Hoffman et al. only discusses or teaches microscopic hollow tubes having "porous" wall layers. (see Abstract)." However, the only part of Hoffman et al.'s abstract that refers to porosity of the walls is the sentence that reads, "The wall layers may be [emphasis added] porous for the purpose of removing the fiber therethrough." Is Applicant taking the position that this sentence means that each and every wall disclosed by Hoffman et al. must be porous? That's not what it says, in any literal sense.

The next sentence in the Abstract reads, "Microtubes and microtube devices may be [again, emphasis added] interfaced with the macroscopic world in a number of ways." Is it Applicant's stance (consistent with his stance re: "wall layers may be porous") that this sentence means that each and every single microtube device disclosed by Hoffman et al. must be interfaced in multiple ways, and that no microtube device may simply be interfaced in a single way?

Doesn't such a reading of "may be interfaced ... in a number of ways," strain one's common sense? Would not one be prone to believe that "may be interfaced ... in a number of ways," means that some of the disclosed microtubes may interface one way, and others may (individually) interface in some other way? If one believes "may be interfaced ... in a number of ways," means some are interfaced a certain way and some are not, should one not also (for consistency of thought) also believe that "may be porous for the purpose of removing the fiber therethrough," means that some of the disclosed wall layers are porous and some are not?

It is argued, at pages 13-14 of the remarks, that "Page 4 of the present Office Action cites col. 7, lines 38-43 as allegedly teaching a 'non-porous' wall... Applicants were not able to find any such teaching in the cited text, nor elsewhere in the Hoffman et al. application." Applicants then go on to quote the words "'a non-porous wall'" directly from what Applicants say is "col. 7 lines 37-43." Having found the actual words "a non-porous wall," through their study of Hoffman et al.'s disclosure, and quoted the same, how can Applicants seriously assert that they were "not able to find any such teaching in the cited text, nor elsewhere in the Hoffman et al. application?"

Earlier in the examination, the examiner cited another such reference. At column 7 lines 23-26, Hoffman et al. state, "if the fiber coating is impervious [i.e. non-porous], the rate of removal of the fiber will be limited by the rate of diffusion of the solvated fiber or fiber gaseous products down the interior of the fiber to the open end.

The phrase, "If X is Y," is made in what the English majors call "declarative" or "indicative" mood. English speakers use "declarative" mood when they intend to declare something to be true. The "if" is included to indicate that the speaker has seen

examples of both impervious and porous fiber coatings, and the rate of removal is limited (but not zero) in the first instance.

If Hoffman et al. did not know whether the coating (the deposited "nanotube material") was ever impervious ("non-porous") they would have said, "If the fiber coating were impervious..." "Were" is the tense of the verb "to be," that would indicate the speaker was using subjunctive mood, to describe something they did not know to necessarily be true. But the speaker did not say "were," the speaker said, "is." "Is" is the tense of the verb "to be" that indicates the speaker is using declarative mood, to describe something the speaker believes in fact to be true.

The Examiner wishes to add one more remark on this subject. At column 7 lines 31-32, with reference to the non-porous walls Applicants were unable to find a "teaching" for, Hoffman et al. state, "Thus, the longer the tube, the longer it will take to remove the fiber." In the Examiner's view, Hoffman et al. would be unable to state this as fact (as they do. Declarative mood again. In subjunctive mood it would have read, "longer it would take to remove") unless they had had a sample of non-porous wall with which to experiment, and measure the time taken to remove the fiber.

It is argued, at page 14 of the remarks, that "Applicants were unable to find the terms 'optionally' or 'temporarily' in the cited text as suggested by the Examiner." In the actual words of the reference, "a non-porous wall could be made porous..." Column 7 line 38. In the Examiner's view, this phrase indicates that at one time at least some of Hoffmann et al.'s walls were non-porous, and that these walls could be (but not necessarily were) made porous. The reference goes on to state, "The actual impervious tube wall could then be applied..." Column 7 line 41. The Examiner understands these

words to mean that when, on occasion, Hoffmann et al.'s non-porous walls were made porous, sometime after they were made porous (having started out non-porous) they were then rendered non-porous (impervious) again by an additional application.

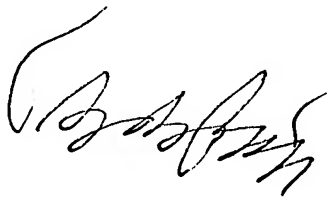
It appears that, in Applicants' view, the Examiner went beyond the pale by assuming that because the reference said the non-porous walls could be made porous, this was an optional step. It further appears that, in Applicants' view, the Examiner went beyond the pale by assuming that because the reference said the (once non-porous) porous walls could later be made impervious, porousness was a temporary condition. In response, the Examiner will limit himself to what the reference actually says, which is that the non-porous walls could be made porous, and if made porous, they could then be made non-porous (impervious) again. The reader of this record can decide for himself/herself whether "could be made porous..." describes an optional step, or whether a wall that is impervious, then porous, and then impervious again, is temporarily porous.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L. Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on 571-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Primary Examiner
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